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Overview:

During my semester studying abroad, I sought to establish two *wishing trees* at the University of Auckland, New Zealand. Wishing trees are a type of interactive art installation where people can anonymously express their goals and dreams by writing them out on a tag and then tying the tag to the branch of a tree. These wishing trees would function as a contribution to both art and science. In terms of facilitating art, wishing trees are considered a type of *guerilla* art, which is artwork that is informally installed in public spaces. Furthermore, introducing wishing trees onto the city campus would beautify and draw attention to the trees themselves, as well as encourage participation from those who passed by. People could read the goals and dreams of strangers, reflect on their own wishes, and leave their personal revelations on a tag if they so desired. In terms of facilitating science, establishing two wishing trees would provide an opportunity to conduct a quasi-experiment that focuses on concepts in social psychology, such as *injunctive norms* and *descriptive norms*. Injunctive norms are the expectations of what 'should be,' of what one thinks they ought to be doing. On the other hand, descriptive norms are the perceptions of how people are actually acting, of what one thinks others are doing. I hoped to observe the influence of injunctive norms on behaviors of people on campus by posting a written notice that encourages participation in the wishing tree. Furthermore, individuals seeing the numerous tags on the branches that indicate wishing tree participation by others would experience descriptive norms by perceiving the actions of other people. The current study takes a different approach than the traditional research lab and utilizes wishing trees in a public space to attract participants. People were free to roam their typical college campus environment and behave naturally, unaware of how they might be affected by the subtly manipulated norms of the quasi-experiment. The fact that the study was conducted 'in the real world' gives it a high amount of external validity. In light of these factors, I wished to explore the potential of guerilla art installations for testing the impact of injunctive norms and descriptive norms outside of a lab environment.

For the first half of the experiment, Tree 1 would start with no notice and Tree 2 would start with a notice. In the last half of the experiment, the situations would be swapped, where Tree 1 would be given a notice and Tree 2's notice would be removed. I planned to manipulate the presence of the notice to test the influence of injunctive norms on behavior. In order to test the influence of descriptive norms on behavior, I would record participation over time. The more time that elapsed, the greater the accumulation of tags in the tree branches. It would become more and more apparent that other people were engaging with the wishing tree, which would strengthen the descriptive norm. At the midway point of the experiment, I would manipulate the notice/no notice situations by swapping them out, allowing the injunctive norm conditions to be compared in the context of descriptive norms that would increase over time. In the first two weeks of the experiment, Tree 1 would have the injunctive norm absent (no notice) and a weak descriptive norm (few tags). Tree 1 in the last two weeks of the experiment would have an injunctive norm present (with notice) and a strong descriptive norm (the accumulation of many tags). On the other hand, Tree 2 would have an injunctive norm present (with notice) and a weak descriptive norm (few tags) in first two weeks. In the last two weeks, Tree 2 would have an absent injunctive norm (no notice) and a strong descriptive norm (the accumulation of many tags).

Conditions of the Quasi-Experiment:

	First Two Weeks	Last Two Weeks
Tree 1		
Injunctive norm	• No notice	• With notice
Descriptive norm	• Few tags	• Many tags
Tree 2		
Injunctive norm	• With notice	• No notice
Descriptive norm	• Few tags	• Many tags

I would record the amount of participation in the quasi-experiment by estimating how many tags were tied onto the branches as wishes (initially my plan was to distinguish the tags after the midpoint by altering the marker color for the tags, but that strategy came with complications). Instead of counting the number of tags on the branches directly, I would record the number of tags re-stocked in the boxes during the previous night and then count the tags left at the end of the current night to calculate the number of tags missing in the box for that day. I would derive my measure from a simple subtraction problem of the previous night's tags minus the remaining tags of the current night to arrive at the number of tags missing. I presumed that the missing tags from the box were tied onto the trees as wishes.

I had three general hypotheses for this study. First, I predicted that the participation in both trees would increase exponentially over time. I expected that this escalation would be due to the strengthening of descriptive norms: as more people added tags, the descriptive norm of 'people are participating in this wishing tree' would become more apparent. Perceptions of how people were acting would become more obvious over time when the trees had the time to accumulate more tags. Second, I hypothesized that the notice condition of Tree 2 would result in the most initial participation. I expected that the notice on Tree 2 during the first two weeks of the study would create an injunctive norm, which would influence more people to participate. However, Tree 1, which would not have a notice during the first two weeks, would not establish this injunctive norm, and would therefore be less likely to engage participants. Third, I predicted that Tree 1's notice condition during the last two weeks of the study would result in the greatest amount of participation compared to any other condition. The presence of the notice and the accumulation of many tags would mean that Tree 1 would be characterized by both injunctive and

descriptive norms, granting it the ability to influence behavior through two avenues: the notice would provide explicit expectations that people should participate, and the accumulation of tags would show that many other people have participated in this wishing tree during the earlier weeks of the study.

Method:

Materials:

- Blank tags made from twine and duct tape
- Duct-tape-covered cardboard boxes to hold tags
- Markers (red and blue on the box of Tree 1, black and green on the box of Tree 2)
- Notice adhered to the front of a box stating: "Now that you have noticed this Wishing Tree, write down a wish and hang a tag!"

Injunctive Norm Conditions (manipulation):

- Tree 1: no notice, then notice (with previous tags still present)
- Tree 2: notice, then no notice (with previous tags still present)

Process:

- Two suitable trees were selected on the city campus of the University of Auckland, New Zealand
- Wishing trees were installed around midnight on May 3rd, 2015
    - Each tree was installed with 5 marked tags tied to the branches and 33 blank tags in box with markers (please see the first image for Photos of the Project for more information)
- Tags were recorded around midnight for two weeks, nearly every night from May 4th to May 17th
- Tags re-stocked nightly so there will be tags for participants; same number re-stocked for each tree
    - Number varied night to night depending on the materials available to make blank tags (please see the Data Set table for more information)
- Injunctive norm conditions were swapped around midnight on May 17th and the notice was moved from Tree 2 to Tree 1
- Periodical repairs made to the boxes and periodical replacement of missing markers

Two trees were identified on campus that were transformed into wishing trees for the quasi-experiment: Tree 1 was located in a courtyard near the library entrance and Tree 2 was in a courtyard that was across the road from a park. Both had low branches and were in locations with frequent foot traffic. Duct-tape-covered cardboard boxes were affixed to the trunks of each tree using twine. Markers were clipped to the outside of the boxes. A written notice was adhered to the front of Tree 2's box during the first two weeks of the study, and then it was removed and adhered onto Tree 1's box during the last two weeks. Blank tags made from twine and duct tape were placed inside the boxes. These tags were re-stocked nightly so there would be tags for participants the next day; Tree 1 and Tree 2 each received the same number of tags every time the tags were replaced. However, the number of tags varied depending on the materials available to make blank tags on that date. In other words, Tree 1 and Tree 2 would be re-stocked with the same number of tags as each other, but that amount would fluctuate from night to night. Each tree was installed with 5 pre-marked tags tied to the branches and 33 blank tags in the box. The pre-marked tags were made-up wishes intended to convey a descriptive norm to get people to participate at the start of the experiment. The pre-made wishes were similar for each tree: for example, "I really really want a cat!" was tied to Tree 1 and "I hope to get a pet dog!" was tied to Tree 2. As mentioned previously, data was collected by recording the number of tags re-stocked in the boxes the previous night and then counting the tags left at the end of the current night to calculate the number of tags missing in the box, which were presumed to be tied onto the trees as wishes.

RESULTS:

	Date	Tags missing from box on Tree 1	Tags missing from box on Tree 2
Notice condition 1	4-May		
	5-May	13	2
	6-May	***22***	13
	7-May	6	***14***
	8-May	5	0
	9-May	2	4
	10-May	5	8
	11-May	9	6
	12-May	8	3
	13-May	21	16
	14-May	***30***	9
	15-May	***23***	3
	16-May	25	5
	17-May	6	4
Notice condition 2	18-May	***30***	5
	19-May	***35***	6
	20-May	***35***	12
	21-May	***28***	0
	22-May	***35***	16
	23-May	2	0
	24-May	10	0
	25-May	23	22*
	26-May	20	19
	27-May		
	28-May	***30***	19
	29-May	***35***	6
	30-May	5	1
	31-May	12	3

Bold font indicates nights where all the tags were gone from the box (leading to the possibility of more participation on that day if there had been more tags)

* The box was found ripped and the tags had blown through the courtyard

Statistical Tests:

Using the data that I collected, I calculated means (*M*) from selected sub-categories of the data set. Comparing these averages helped to highlight differences between conditions. Furthermore, I was able to run several statistical tests, such as the paired samples T-test (*t*), which can determine if differences that occurred between experimental conditions are correlated with a variable and do not happen just by chance occurrence. For this study, the manipulated variable was the notice/no notice conditions and the measure for the data set was the number of tags missing from the boxes. Making statistical calculations are important for finding out if correlations between the manipulated variable and the measure for the data set occurred beyond chance ($p < 0.05$).

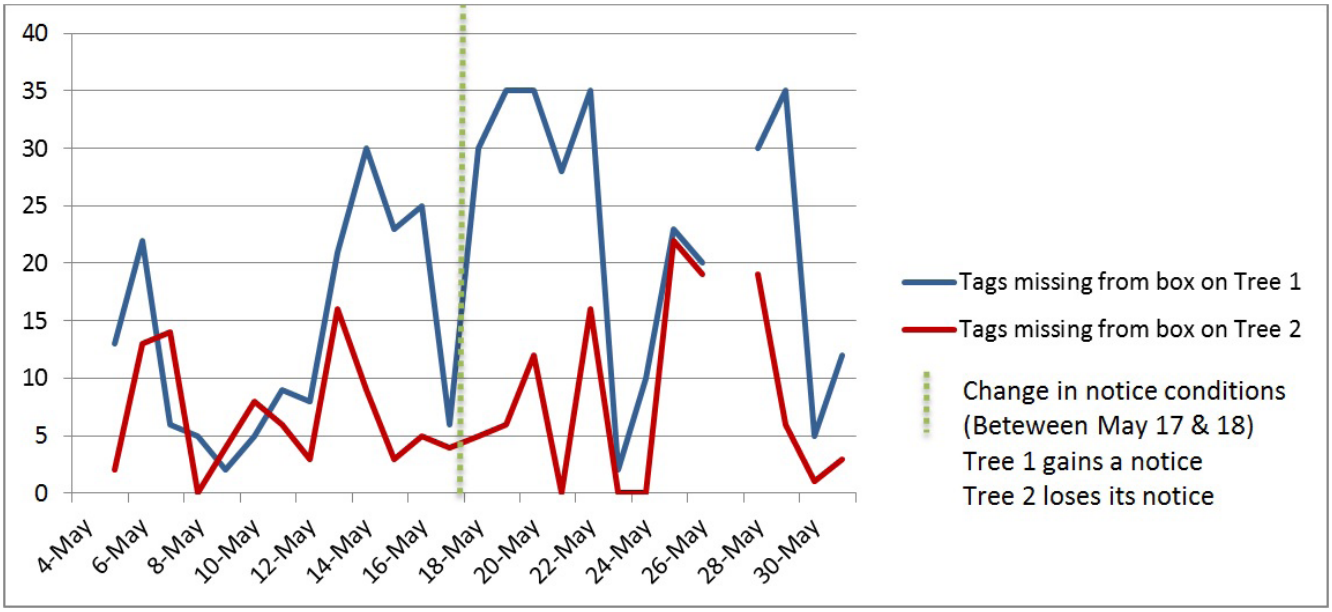
Over the four weeks, data suggested that 671 tags were used between the two wishing trees. Over time, participation for both trees increased: 262 tags were used in the first two weeks of the quasi-experiment, and 409 tags were used in the last two weeks of the quasi-experiment. The mean calculated for the tags present during the first two weeks of no notice on Tree 1 was $M = 13.5$, $SD = 9.4$. The mean calculated for the tags present when Tree 1 had a notice in the last two weeks of the experiment was $M = 23.1$, $SD = 12.1$. The means of the two conditions on Tree 1 were compared using a paired samples T-test, and the means differed significantly, $t\ (12) = 2.78$, $p = 0.02$. The statistical test indicates that the difference in means can be attributed to something other than chance occurrence. The mean calculated for the tags present during the first two weeks with a notice on Tree 2 was $M = 6.7$, $SD = 5.0$. The mean calculated for the tags present in the last two weeks while there was no notice on Tree 2 was $M = 8.4$, $SD = 8.2$. The means on Tree 2 were compared using a paired samples T-test, and the means did not differ significantly, $t\ (12) = 0.59$, $p = 0.56$. In this case, the statistical test indicates that the difference in means may in fact be due to chance. The means for conditions across both trees were $M = 14.9$, $SD = 12.3$ for the notice conditions and $M = 10.9$, $SD = 9.0$ for the no notice conditions. The comparison between notice and no notice conditions across both trees was calculated using a paired samples T-test and showed that the differences were not statistically significant, but there was a trend towards significance in the correct direction, $t\ (25) = 1.36$, $p = .19$. The statistical test indicates that there is a possibility that the difference in means can be attributed to something other than chance occurrence. However, there is not very strong evidence for this claim.

Statistical Results:

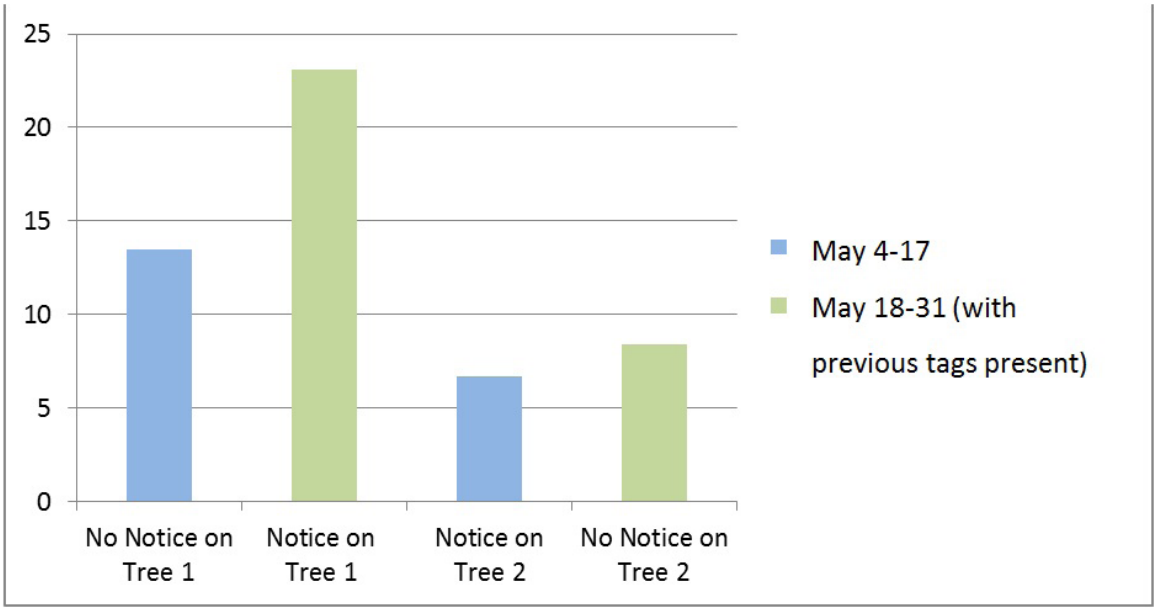
	Notice Condition			No Notice Condition		
	Days	Mean	SD	Days	Mean	SD
Tree 1	13	23.1	12.1	13	13.5	9.4
Tree 2	13	6.7	5.0	13	8.4	8.2
Both Trees	26	14.9	12.3	26	10.9	9.0

Figures:

Number of tags recorded for Tree 1 and Tree 2 over a time period of four weeks:



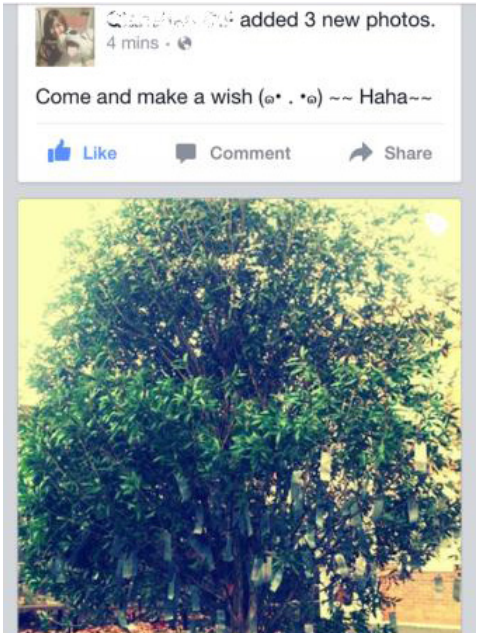
Mean numbers of tags counted for each condition:



Reflection:

The wishing trees on the University of Auckland campus allowed me to create a public art installation that consisted of details I could manipulate to test out the social psychology concepts of descriptive norms and injunctive norms. In regards to guerilla art participation, many people wrote on tags, read the tags that were already tied to the trees, and took photos of the trees. I witnessed people in the process of writing out their wishes, overheard a group of students questioning and discussing the installation, and even got to see some social media coverage of a wishing tree pop up in my newsfeed when one of my friends shared a picture of it to Facebook. After the last day that I recorded data for the study, a group of my friends gathered around the trees to read some of the tags. We found phone numbers, crude jokes, lonely cries for help, detailed doodles,

and wishes written in multiple languages, including Japanese, Chinese, and Arabic. Wishes varied widely in content: some people desired wealth and success, some people hoped to find love, and some people wanted to make their deceased relatives proud. Some individuals even replied to other people's wishes, jotting their comments right on the tag. I saw a few improvised tags, including one made out of a leaf and a piece of string. Following the study, one of my friends from another city came to visit; as part of the city campus tour I gave him, I showed him the wishing tree so he could hang a tag. Many individuals engaged with the art installation, and my method of data collection suggests that 671 tags were used between the two wishing trees over the course of four weeks. My hope is that people found interacting with the wishing trees to be a meaningful experience that prompted them to ponder the human condition, examine themselves and their environment, engage in self-expression, and/or just play around to have fun.



In addition to the successful amount of guerilla art participation, the wishing trees also provided me with an opportunity to test my hypotheses for my social psychology quasi-experiment. My hypothesis that participation in both trees would increase exponentially over time (as more people add tags, descriptive norms of participation are strengthened) was partially supported in that there was more participation for both trees in the last two weeks of the experiment (409 tags used) than there was in the first two weeks of the experiment (262 tags used). However, participation did not appear as a curved slope and instead fluctuated greatly, indicating that the rate of participation was more sporadic and inconsistent than predicted. Second, my hypothesis that the notice condition of Tree 2 would result in the most initial participation (due to the injunctive influence from the notice) was not supported by the data, since Tree 1 did not have a notice and used 175 tags in the first two weeks while Tree 2 had a notice and used 87 tags in the first two weeks. Lastly, the data supported my hypothesis in that the presence of both the notice and many tags in Tree 1's notice condition (characterized by both injunctive and descriptive norms in the last two weeks of the study) would result in the greatest increase of subsequent participation. In this condition, Tree 1 used 300 tags, which is almost half the total number of tags used for the whole entire experiment. There was a statistically significant difference between the mean number of tags on Tree 1 in the first two weeks (no notice) compared to the mean number of tags on Tree 1 in the last two weeks (with notice). In other words, the difference in means can be attributed to something other than chance occurrence, indicating that injunctive norms and descriptive norms may have had an influence on wishing tree engagement since they are positively correlated with increased rates of participation.

To achieve my goal of using wishing trees as a method of testing my hypotheses, I had to be adaptable in my research strategies and overcome multiple unforeseen obstacles. One adaptation that I had to make was my method of data collection. Originally I planned to count the tags tied to the trees every night and switch the marker color to indicate the new injunctive condition at the midpoint of the experiment. However, I soon discovered that the strategy of counting the tags directly became confusing as the tags became hidden behind branches and leaves. When the trees began to accumulate high numbers of tags it became tedious to constantly re-count for accuracy, so I instead recorded the number of tags I re-stocked in the boxes and would just count the tags left at the end of the night to calculate the number of tags missing from the box. I also faced the problem of tags disappearing from the boxes faster than I could create them, which may have led to an inaccurate recording of how many people could have potentially participated that day if there would have been enough tags, as indicated by the Data Set table. Additionally, the whole box on Tree 1 was stolen on the first day, including the 33 tags that had been stocked in the box. As a result, I voided the data collection for both trees for the first day, since Tree 2 had only accumulated one tag. During the final week, the box on Tree 2 ripped, and tags were blown all over the courtyard. I tried to find as many as I could to get as close to an accurate measure as possible. I was able to make replacements and repairs, but these events impacted my ability to collect data. A few days before the study concluded, I missed a night of data collection due to another commitment; however, this counterbalanced the setback of no data collection for the first day. I was also not able to control the campus events that occurred in the proximity of the wishing trees, since wishing Tree 1 seemed to be in an area where students met up for events, which increased foot traffic and therefore opportunities for participation. Furthermore, I was unable to control the weather, since there were lower levels of participation on rainy days.
In addition to the limited control I had over environmental factors, I must acknowledge the drawbacks of the design of this study. Because I was not able to randomly assign participants to the few tags/many tags and notice/no notice conditions of the wishing trees, the study was not a *true experiment*. Therefore, I refer to it as a *quasi-experiment*, since conducting it 'in the real world' came with numerous variables I could not control, such as weather, foot traffic, repairs, etc. Because of these additional variables, I cannot make a statement that injunctive norms or descriptive norms 'caused' more people to interact with the wishing trees, since other factors may have actually influenced participation beyond my awareness. Nevertheless, I found statistically significant correlations, which helps to add to the growing body of research on injunctive norms and descriptive norms.
The fact that this quasi-experiment was conducted outside of a lab grants it a high level of external validity, since people were behaving naturally in their typical environment. Despite the setbacks, the design of this study could open new avenues for researching human behavior. Participation in guerilla art installations can be an innovative approach for data collection in the field of social psychology.


Overall, I think that my project was successful. About nine rolls of duct tape later, I made approximately 700 tags for this project over the course of about a month. Hundreds of people participated in the guerilla art wishing trees, and I was able to collect enough data to run a quasi-experiment and test my hypotheses, which yielded

some statistically significant results. There were numerous setbacks, but I was able to adapt and find ways to keep the project going. I fondly recall the semester I spent studying abroad in New Zealand, and I hope that the wishing trees I installed on the University of Auckland campus will remain long after I have returned home.

Acknowledgements:
Special thanks to several members of the faculty in Arcadia University's psychology department for helping me with the brainstorming process of this quasi-experiment. I owe a thank you to Dr. Robbins, Dr. Brown, and Professor Levy. I appreciate your insight into the considerations integral to psychology research.